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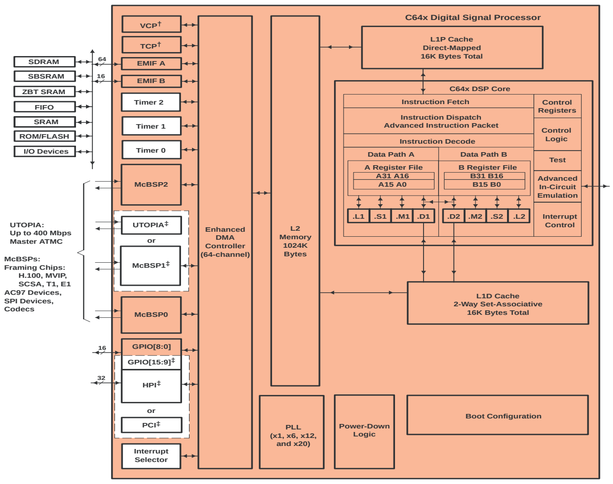
Internet Addresses

[1] **Pass DIY**:
www.passdiy.com/legacy.htm
[2] **ESP, Elliott Sound Products**:
http://sound.westhost.com/index.html
[3] **Bebe T**:
http://diyaudio.8m.com/Bebet/bebet.html
[4] **The Class-A Amplifier Site**:
www.tcaas.btinternet.co.uk/
[5] **The Leach Amp**:
http://users.ece.gatech.edu/~mleach/lowtim/
[6] **A and T Labs**:
www.a-and-t-labs.com/K6_Sw_Amp/
[7] **Schematic.info**:
http://schematic.narod.ru/a_index.htm

functional block and CPU (DSP core) diagram



DSPs at 1 GHz

Top performance from 90-nm technology

The 90-nm process technology employed by Texas Instruments gives a spectacular boost to DSP performance. For the first time, DSPs pass the 1-GHz barrier.

DSPs (digital signal processors) type TMS320C6414/ 15/16 sample at 1 GHz, providing stunning throughput levels. They provide the user with 8 GigaMACs for 8-bit data width for video applications, or 4 GigaMACs for 16-bit data commonly used in speech and audio processing. This sort of throughput not only improves the bandwidth and channel capacity of existing real-time applications like base stations for mobile phones and radios, IP-based video, fast wideband networks, medical diagnosis equipment and radar, but also opens the way to new applications ranging from adaptive antenna arrays and intelligent vehicles right up to artificial vision.

A single 1-GHz component, for example, can now manage real-time transrating of eight MPEG-2 channels at D1 resolution (720x 480) or the processing of 55 GSM channels using AMR (adaptive multirate) speech encoding in a cellphone base station. In this way, designers no longer have to implement complex circuits using multiple processors.

The speed breakthrough has been achieved thanks to an innovative design method and improved manufacturing processes employing 90-nm technology, making it possible to produce faster and smaller ICs than ever before. TI's ability to pack transistors in an extremely tight space has resulted in dramatic increases in speed and chip density. The change to 90-nm technology reduces the chip size and with it the production costs, allowing almost 50% more chips to be made from a single wafer. This not only had a positive effect on the new chips, but also allowed the price of the existing 720-MHz 'C64x series to be reduced by more than 50%. The 90-nm technology also simplifies the integration of System-on-a-Chip architectures by rationalising the communication between the DSP core, memory, peripherals, RISC processors and analogue components. These innovations comprise a command pipeline for efficient use at frequencies greater than 1 GHz, a dual data architecture with 32 32-bit registers per data path and optimized implementation of data functional units required for the execution of critical program paths.

The new components are software compatible with the earlier generations — the 'C64 command set was not changed, so the design and process improvement are virtually invisible to software developers. The new DSPs being pin compatible with the earlier versions, they can easily be dropped into existing designs, boosting the data throughput, lowering energy consumption and keeping system costs within reason.

The 1-GHz DSPs types C6416, C6415 and C6416 are currently only available as samples. All three components have an on-chip 1-MB memory and only differ in respect of their integrated peripheral devices. The DSPs will be available in volume quantities by Autumn 2004. Unit prices start at US$ 189.

To prevent time loss, software engineers can avail themselves of the C64x Starter Kit and make a head start with the design of key software elements of a target system, including algorithms, command codes and initial software system integration. The C64x kit contains didactic exercises, reference framework support, the integrated Code Compose Studio development platform, the DSP/BIOS real-time kernel and a number of standard algorithms. The Kit is already available at a cost of US$ 395.

Further information on this interesting starter kit may be found at www.ti.com/c6000dsksp.

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Contact information:

European Product Information Center (EPIC)
Texas Instruments Germany
Haggertystrasse 1 - D-85350 Freising - Germany.
Tel. (+49) 8161 803311
Email: epic@ti.com
Internet: www.ti.com/sc/epic/
www.ti.com/1ghzsamplingp